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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,393	12/27/2000	Hiroshi Minagawa	SIP1P044	7511

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EXAMINER	
SANTIAGO, ENRIQUE L	
ART UNIT	**PAPER NUMBER**
2671	

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/751,393	MINAGAWA ET AL.	
	Examiner	Art Unit	
	Enrique L Santiago	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 5, 8, 9, 13, 16, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson "3D Studio MAX 2 Fundamentals" in view of Van Hook et al. U.S. Patent 6,342,892 in view of Kaku et al. U.S. Patent No. 6,322,448 in view of Foley et al. "Computer Graphics: Principles and Practice" and further in view of Ohba et al. US patent no. 5,214,758.

-Regarding claim 1, Peterson discloses generating a dummy object of said object by duplicating said object (... performs Object motion blur by rendering multiple copies of selected objects..." page 452, paragraph 2, page 455, fig. 16.7) and determining a first position of said object and a second position of said dummy object so that said dummy object thus generated is positioned behind said object and overlaps only in part with said object when observed from a viewpoint, the orientation of said dummy object being the same as that of said object (page 455, fig. 16.7, upper left, two leftmost disks in the figure). Peterson does not explicitly disclose drawing said object at said first position and drawing said dummy object at said second position except for an overlapping portion between said object and said dummy object when observed from the viewpoint and wherein the drawing of said dummy object is in a second lightness different from a first lightness of said object said second lightness being based on said first

lightness. Van Hook discloses discarding overlapping portion between objects (... z buffer value indicates that the previously written pixel is closer... the new pixel is discarded... thus accomplishing hidden surface removal..." column 57, lines 4-8). Kaku discloses that the drawing of said dummy object is in a second lightness different from a first lightness of said object said second lightness being based on said first lightness ("... rendering is performed whilst applying... semi-transparency... the residual image being displayed in a more transparent fashion as the number frames by which it is previous is increased..." column 22, line 58-column 23, line 1, fig. 35). Therefore at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the program of Peterson to discard the overlapping portion between objects as taught by Van Hook and to draw a dummy object in a second lightness different from a first lightness, the second lightness being based on the first lightness as taught by Kaku, because hidden surface removal is essential for a image to make sense (Foley, page 612, paragraph 3) and because applying semi-transparency to residual images creates a better dramatic effect (Kaku, column 22, lines 58-62).

Peterson, Van Hook et al, Kaku et al, and Foley et al. do not directly teach receiving object data representing an object at a particular instance of a virtual time-space continuum; the dummy object having an identical shape of said object and drawing in a digital video frame representing said instance of said virtual time-space continuum. However in similar art Ohba teaches said limitations (fig. 3, column 7, lines 51-57). Therefore it would have been obvious to one skilled in the art at the time of the invention to add these features to the previously stated art, because it would allow the fine tuning of the motion of the object (see Ohba, column 2, lines 20-23).

-Regarding claim 2, Peterson discloses the first position of said object and the second position of said dummy object are determined so that when observed from the viewpoint there is deviation between a straight line connecting a predetermined reference position of said object and the viewpoint and a straight line connecting the view point and a position in said dummy object corresponding to the predetermined reference position of said object (page 455, Fig. 16.7, upper left, two leftmost disks in the figure.).

-Regarding claim 4, the modified program of Peterson as applied to claim 1 above meets the limitations recited in claim 4. As noted above, VM Hook discloses a hidden surface removal treatment using a Z-buffer ("... z buffer value indicates that the previously written pixel is closer... the new pixel is discarded... thus accomplishing hidden surface removal..." column 57, lines 4-8) and using the Z-buffer to draw an object in a different lightness ("... depth comparator operates... with z buffer... to insure transparent values are blended properly..." page 56, lines 59-61).

-Regarding claim 5, the modified program of Peterson as applied to claim 1 above meets the limitation recited in claim 5. Kaku discloses that the second lightness is higher than the first lightness ("... the residual image being displayed in more transparent fashion as the number of frames by which it is previous is increased..." column 22, line 66, column 23, line 1).

-Method claims 8 and 9 recite steps performed by the program of claims 1 and 2; therefore they are similar in scope and are rejected under the same rationale.

-Claim 13 is rejected with the rationale of the rejection of claim 1. Claim 13 recites the additional limitations of a computer-readable storage medium storing a program for a video game which draws an object in a virtual space and a computer which reads out at least one part

of said program from said recording medium to perform, by reading out at least one part of said program from said storage medium. Kaku discloses the aforementioned limitations ("... the video game machine comprises... CD-ROM... reading application software supplied by... CD-ROM and generating a video..." column 9, lines 41-45 and column 10, lines 37-44, figs. 1 and 33).

-Claim 16 is rejected with the rationale of the rejection of claim 1. Claim 16 recites the additional limitations of a computer and a computer-readable storage medium storing a program executed by said computer. Kaku discloses the aforementioned limitations ("...the video game machine comprises... CPU block...CD-ROM... reading application software supplied by... CD-ROM and generating a video..." column 9, lines 41-45 and column 10, lines 37-44).

Claim 17 is rejected with the rationale of the rejection of claim 1.

-Regarding claim 20, Peterson discloses generating an object comprising a plurality of vertices at a first position in the three dimensional space ("... performs Object motion blur by rendering multiple copies of selected objects...to perform... Object motion blur... right-click on the object..." page 452, paragraphs 2 and 3, page 455, fig. 16.7 note that fig. 16.5 discloses the objects contain vertices); generating a dummy object of said object by copying the plurality of vertices for such object, the dummy object having the same shape and orientation ("... performs Object motion blur by rendering multiple copies of selected objects..." page 452, paragraph 2, page 455, fig. 16.7), adjusting the position of the dummy object to a second position in the virtual three dimensional space shifted from the first position such that at least a portion of the dummy object does not overlay the object when viewed from a selected viewpoint (page 455, fig. 16.7, upper left two leftmost disks in the figure) and said luminance values for the dummy based on the corresponding luminance values for the object (note a copy will have the same

luminance values as the original) and the drawing of the object and the dummy object at the respective first and second positions adjusted such that the dummy object is positioned behind said object and overlaps only in part with said object when observed from the selected viewpoint (page 455, fig. 16.7, upper left two leftmost disks in the figure).

Peterson does not explicitly disclose adjusting the luminance values for the dummy such that luminance values for the dummy are different than the corresponding luminance values for the object, said luminance values for the dummy based on the corresponding luminance values for the object; drawing said object at said first position and drawing said dummy object at said second position except for an overlapping portion between said object and said dummy object when observed from the selected view, the dummy object being drawn with the adjusted luminance values. Kaku discloses adjusting the luminance values for the dummy such that luminance values for the dummy are different than the corresponding luminance values for the object, ("... rendering is performed whilst applying... semi transparency displayed in a more transparent fashion..." column 22, line 58-column 23, line 1, fig. 35, note that by reducing transparency the luminance value is adjusted) and the dummy object being drawn with the adjusted luminance value ("... rendering is performed whilst applying... semi transparency displayed in a more transparent fashion..." column 22, line 58-column 23, line 1, fig. 35, note that by reducing transparency, the luminance value is adjusted).

Van Hook discloses drawing said dummy object at said second position except for an overlapping portion between said object and said dummy object when observed from the selected view ("... z buffer value indicates that the previously written pixel is closer... the new pixel is discarded... thus accomplishing hidden surface removal..." column 57, lines 4-8).

Claims 6, 7, 11, 12, 14, 15, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of Van Hook, in view of Kaku, in view of Foley (as applied to claim 1 above) in view of U.S. Patent 5,579,454 to Billyard et al. and further in view of Ohba et al. US patent no. 5,214,758.

-Regarding claim 6, the modified program of Peterson as applied to claim 1 above meets the limitations recited in claim 6 except "... setting a distance from a view point of each polygon forming the object..." and "... drawing each polygon... in accordance with a drawing order of said polygons resulting from sequencing of said polygons from the greatest distance from the viewpoint..." However, Billyard discloses the "Painter's Algorithm" a method in which polygons are ranked in order of decreasing distance from the viewpoint and then rendering the polygons in the aforementioned order (column 2, lines 35-42). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the program of Peterson by ranking the polygons in order and rendering the polygons in the aforementioned order as taught by Billyard, because it would ensure that a correct picture results if the objects are rendered in that order (Foley, page 672, paragraph 2).

Peterson, Van Hook, Kaku, Foley and Billyard, do not directly teach receiving object data representing an object at a particular instance of a virtual time-space continuum; the dummy object having an identical shape of said object and drawing in a digital video frame representing said instance of said virtual time-space continuum. However in similar art Ohba teaches said limitations (fig. 3, column 7, lines 51-57). Therefore it would have been obvious to one skilled in the art at the time of the invention to add these features to the previously stated art, because it would allow the fine tuning of the motion of the object (see Ohba, column 2, lines 20-23).

Claim 7 is rejected with the rationale of the rejection of claim 6. In the Painter's Algorithm disclosed in claim 6, only the pixel data closest to the viewpoint will be displayed on the screen.

Method claims 11 and 12 recite steps performed by the program of claims 6 and 7; therefore they are similar in scope and are rejected under the same rationale.

Claim 14 is rejected with the rationale of the rejection of claim 6. Claim 14 recites the additional limitations of a computer-readable storage medium storing a program for a video game which draws an object in a virtual space and a computer which reads out at least one part of said program from said recording medium to perform, by reading out at least one of said program from said storage medium. Kaku discloses the aforementioned limitations ("... the video game machine comprises... CD-ROM... reading application software supplied by... CD-ROM and generating a video..." column 9, lines 41-45 and column 10, lines 37-44, figs. 1 and 33).

Claim 15 is rejected with the rationale of the rejection of claim 7. Claim 15 recites the additional limitations of a computer-readable storage medium storing a program for a video game which draws an object in a virtual space and a computer which reads out at least one part of said program from said recording medium to perform, by reading out at least one of said program from said storage medium. Kaku discloses the aforementioned limitations ("... the video game machine comprises... CD-ROM... reading application software supplied by... CD-ROM and generating a video..." column 9, lines 41-45 and column 10, lines 37-44, figs. 1 and 33).

Claim 18 is rejected with the rationale of the rejection of claim 6.

Claim 19 is rejected with the rationale of the rejection of claim 7.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of Van Hook further in view of Kaku yet still further in view of Foley as applied to claims 1 and 8 above further in view of Rimoto et al. U.S. Patent 6,482,086.

-Regarding claim 3, the modified program of Peterson does not explicitly disclose wherein said drawing, said dummy object is drawn before said object is drawn. Rimoto discloses the aforementioned limitation ("... The ball is not displayed on the display screen... the shadow of the ball... displayed... fig. 3D... the ball is displayed... at the same time..." column 10, lines 46-62, figs. 3A-3E). Therefore it would have been obvious a person of ordinary skill in the art at the time the invention was made to further modify the program of Peterson by drawing the dummy object before the object is drawn as taught by Rimoto, to obtain a combination of operation support of a computer and the operation skill of the user (Rimoto, column 2, lines 19-24).

Method claim 10 recites steps performed by the program of claim 3, therefore they are similar in scope and are rejected under the same rationale.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of Van Hook in view of Kaku in view of Foley as applied to claim 20 above further in view of Yutaka U.S. Patent No. 5,619,629.

Regarding claim 21, Peterson does not explicitly disclose adjusting such that the dummy object is positioned behind said object by adding polygons corresponding to the dummy object to a z-sort table after a shift of the first address of the soft table. Yutaka discloses performing a z-sort operation on polygon data using a z-sort table (column 5, lines 53-66, figs. 3 and 4). Therefore it would have been obvious to a person of ordinary skill in the art to at the time the

invention was made to modify the program of Peterson by adding polygons corresponding to the dummy object to a z-sort table after a shift of the first address of the sort table as suggested by Yutaka, because it would make it possible to simplify control of Z-sorting and speedily produce drawing data of excellent picture quality (Yutaka, column 2, lines 5-10, column 7, lines 21-24).

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US patent no. 6,667,741 B1

US patent no. 5,974,823

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Enrique L Santiago whose telephone number is (571) 272-7648. The examiner can normally be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman whose telephone number is (571) 272-7653, can be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

703 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to [Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor] (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Enrique L. Santiago

March 20, 2005